

Peterson 18

Serial No. 09/915,963

Claims Listing

1 1. (Canceled)

1 2. (Canceled)

1 3. (Currently Amended) An antenna structure comprising:
2
3 at least one antenna element, the at least one antenna element having at least one
4 taper; and
5
6 a symmetrical finite ground plane coupled with the at least one antenna element;
7
8 wherein the at least one antenna element comprises a traveling wave antenna supporting a
9 phase velocity greater than the speed of light and The antenna structure of Claim 1,
10 wherein the taper comprises a linear profile, a linear constant profile, a broken-linear
11 profile, an exponential profile, an exponential constant profile, a tangential profile, a step-
12 constant profile, or a parabolic profile.

1 4. (Currently Amended) An antenna structure comprising:
2
3 at least one antenna element, the at least one antenna element having at least one
4 taper; and
5
6 a symmetrical finite ground plane coupled with the at least one antenna element;
7

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8 | wherein the at least one antenna element comprises a traveling wave antenna supporting a
9 | phase velocity greater than the speed of light and~~The antenna structure of Claim 4,~~
10 | wherein the antenna structure supports a cigar-like directional three-dimensional beam
11 | pattern and a butterfly wing-like directional three-dimensional beam pattern.

1 | **5.** (Currently Amended) The antenna structure of Claims 3 or 4 ~~Claim 4,~~
2 | wherein the at least one antenna element is positioned at an angle from the symmetrical
3 | ground plane.

1 | **6.** (Original) The antenna structure of Claim 5, wherein the angle is about 90
2 | degrees with respect to the x-, y- and z- axes.

1 | **7.** (Currently Amended) The antenna structure of Claims 3 or 4 ~~Claim 1,~~
2 | wherein the at least one antenna element is coupled with the symmetrical ground plane by
3 | means of an unbalanced impedance.

1 | **8.** (Original) The antenna structure of Claim 7, wherein the unbalanced
2 | impedance comprises a coaxial cable.

1 | **9.** (Original) The antenna structure of Claim 7, wherein a first conductor of
2 | the unbalanced impedance mechanically couples the at least one antenna element with the
3 | symmetrical ground plane.

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1 **10.** (Currently Amended) The antenna structure of Claim 3 or 4, Claim 1,
2 wherein the symmetrical ground plane is disk shaped.

1 **11.** (Canceled)

1 **12.** (Canceled)

1 **13.** (Currently Amended) An antenna structure comprising:
2
3 an array of at least two antenna elements, each antenna element having at least
4 one taper;
5
6 a symmetrical finite ground plane; and
7
8 an unbalanced impedance for coupling the array of at least two antenna elements
9 with the symmetrical ground plane;
10
11 wherein at least one antenna element of the array comprises a traveling wave antenna
12 supporting a phase velocity greater than the speed of light and
13 ~~Claim 11:~~ wherein the taper of at least one antenna element of the array comprises a
14 linear profile, a linear constant profile, a broken-linear profile, an exponential profile, an
15 exponential constant profile, a tangential profile, a step-constant profile, or a parabolic
16 profile.

1 **14.** (Currently Amended) An antenna structure comprising:
2

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3 an array of at least two antenna elements, each antenna element having at least
4 one taper;
5
6 a symmetrical finite ground plane; and
7
8 an unbalanced impedance for coupling the array of at least two antenna elements
9 with the symmetrical ground plane;
10
11 wherein at least one antenna element of the array comprises a traveling wave antenna
12 supporting a phase velocity greater than the speed of light and~~The antenna structure of~~
13 ~~Claim 11.~~ wherein each antenna element of the array supports a cigar-like directional
14 three-dimensional beam pattern and a butterfly wing-like directional three- dimensional
15 beam pattern.

1 15. (Currently Amended) The antenna structure of Claims 13 or 14~~Claim 11~~,
2 wherein each antenna element of the array is positioned at an angle from the symmetrical
3 ground plane.

1 16. (Original) The antenna structure of Claim 15, wherein the angle for each
2 antenna element is about 90 degrees with respect to the x-, y- and z- axes.

1 17. (Currently Amended) The antenna structure of Claims 13 or 14~~Claim 11~~,
2 wherein the unbalanced impedance comprises a coaxial cable.

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1 18. (Original) The antenna structure of Claim 17, wherein a first conductor of
2 the unbalanced impedance mechanically couples each antenna element of the array with
3 the symmetrical ground plane.

1 19. (Currently Amended) The antenna structure of Claims 13 or 14~~Claim 11~~,
2 wherein the symmetrical ground plane is disk shaped.

1 20. (Currently Amended) The antenna structure of Claims 13 or 14~~Claim 11~~,
2 further comprising a slow wave antenna to widen the directivity of the antenna structure.

1 21. (Canceled)

1 22. (Currently Amended) An apparatus comprising:
2
3 a transceiver; and
4
5 an antenna structure for radiating or capturing electromagnetic energy from or to
6 the transceiver comprising:
7
8 at least one antenna element having at least one taper, the taper comprising
9 a linear profile, a linear constant profile, a broken-linear profile, an
10 exponential profile, an exponential constant profile, a tangential profile, a
11 step-constant profile, or a parabolic profile;
12

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13 a symmetrical disk shaped finite ground plane, the at least one antenna
14 element being positioned at an angle from the symmetrical disk shaped
15 finite ground plane; and
16
17 an unbalanced impedance for coupling the at least one antenna element
18 with the symmetrical disk shaped finite ground plane;
19
20 wherein the at least one antenna element comprises a traveling wave antenna supporting a
21 phase velocity greater than the speed of light and ~~The apparatus of Claim 24.~~ **wherein the**
22 **at least one antenna element supports a cigar-like directional three-dimensional beam**
23 **pattern and a butterfly wing-like directional three- dimensional beam pattern.**

1 **23. (Currently Amended) The antenna structure of Claim 2122, wherein the**
2 **angle is about 90 degrees with respect to the x-, y- and z- axes.**

1 **24. (Currently Amended) The antenna structure of Claim 2122, wherein the**
2 **unbalanced impedance comprises a coaxial cable.**

1 **25. (Currently Amended) The antenna structure of Claim 2122, wherein a first**
2 **conductor of the unbalanced impedance mechanically couples the at least one antenna**
3 **element with the symmetrical ground plane.**